

Application of: Tae-Kyung Yoo  
Serial No.: 10/563,269  
Amendment A

**AMENDMENTS TO THE DRAWINGS:**

The attached sheet of drawing includes changes to FIG. 1. This sheet, which includes FIG. 1, replaces the original sheet including FIG. 1. Applicant herewith requests to add the legend -- Prior Art -- to FIG. 1. No new matter has been added to FIG. 1.

Attachment: Replacement sheet of drawing

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### **REMARKS**

With careful attention to the Examiner's comments in the Office Action, the Application has been amended to place it in condition for allowance. The remarks presented herein are believed to be fully responsive to the Office Action.

Claims 1-8 are pending in the present application. Applicant is canceling claims 1-8, without prejudice, and adding claims 9-17. The independent claim recited by the present application is claim 9.

### **DRAWING OBJECTION:**

Applicant respectfully replaces Fig. 1 of the present application in accordance with the Examiner's objection. No new matter is added.

### **CLAIM OBJECTIONS:**

The Office Action notes that should claim 1 be found allowable, claim 2 will be objected to under 37 C.F.R. 1.75 as being a substantial duplicate thereof.

Claim 2 has been cancelled, without prejudice. Thus, the rejection thereof is moot. Further, the newly added claim 10 is not a substantial duplicate of claim 9 because it recites an additional limitation.

### **CLAIM REJECTIONS:**

**Claim Rejections under 35 U.S.C. § 102**

A claim is anticipated under 35 U.S.C. 102 only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

Verdegaal Bros. v. Union Oil Company, 814 F.2d 628 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim of the invention. Richardson v. Suzuki Motor Company, 868 F.2d 1226, 1236 (Fed. Cir. 1989). With regard to “inherency,” the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be recognized by persons of ordinary skill. Inherency, however, may be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. In re Robertson, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). Also, a reference cannot anticipate a claim if there is any structural difference, even if the prior art device performs the function of the claim. In re Ruskin, 347 F.2d 843, 146 U.S.P.Q. 211 (CCPA 1965).

The Office Action states that claims 1, 2 and 8 are “product by process” claims that are directed to the product per se.

Applicants respectfully traverse these rejections. Further, claims 1-8 have been cancelled, without prejudice. Thus, the rejections thereof are moot. Further, the newly added claims 9-16 are not “product by process” claims but method claims.

The Office Action further states that claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Kuo et al. (U.S. Patent No. 6,515,306; hereinafter "Kuo et al.").

Applicants respectfully traverse these rejections. Further, claims 1-8 have been cancelled, without prejudice. Thus, the rejections thereof are moot.

Even assuming, for the sake of argument, that the rejections stated in the Office Action apply to the newly added claims 9-17, Kuo et al. does not teach or suggest limitations recited in the independent claim 9 of the present application.

With regard to claim 1, the Office Action states:

Kuo et al. show all aspects of the instant invention (e.g., Figure 3) including:

- a plurality of nitride layers having an active layer 140 for generating light and a p-type GaN layer 132 doped with Mg
- an electrode layer 160 made of ITO
- an n-type nitride layer 150 in contact with the electrode layer

As to the grounds of rejection under section 103(a), how the p-type nitride layer is formed pertains to intermediate process steps which do not affect the final device structure. See MPEP §2113 which discusses the handling of "product by process" claims and recommends the alternative (§102 / §103) grounds of rejection.

#### *Claim 9*

The claimed invention recites the following steps: (1) forming the p-type nitride semiconductor layer of the plurality of nitride semiconductor layers, without a subsequent annealing process, by using ammonia and hydrazine-based material as nitrogen precursor; and

(2) forming the electrode layer to be electrically in contact with the p-type nitride semiconductor layer. The hydrazine-based material as nitrogen precursor together with ammonia generates a radical upon thermal decomposition and the radical is combined with a hydrogen radical to eliminate the hydrogen radical. *See Paragraph [0028]-[0036] of the present application.* The claimed invention relates to a method of forming a p-type nitride semiconductor layer without additional annealing, which means removing Mg-H complex by thermal treatment. Mg-H complex results from the combination of Mg from p-type dopant with H from NH<sub>3</sub>(ammonia). The claimed invention reduces generation of Mg-H complex by capturing H from ammonia through radicals from hydrazine-based source.

However, Kuo et al. does not teach or suggest the recited limitations of claim 9. Since claim 9 is not a product by process claim, the steps recited in claim 9 distinguish the claimed invention over Kuo et al, while the claimed invention is limited to its structures recited in the preamble thereof due to the antecedent basis of the structural component in the limitations of the claimed process.

Claims 10-17 depend from independent claim 9 and, as such, are in allowable condition since claim 9 is clearly allowable over the cited prior art.

In light of the aforementioned amendments and discussion, Applicant respectfully submits that the application is now in condition for allowance.

If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's amendment, or if the Examiner should have any questions

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regarding the present amendment, it is respectfully requested that the Examiner please telephone  
Applicant's undersigned attorney in this regard.

Respectfully submitted,

Date:

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